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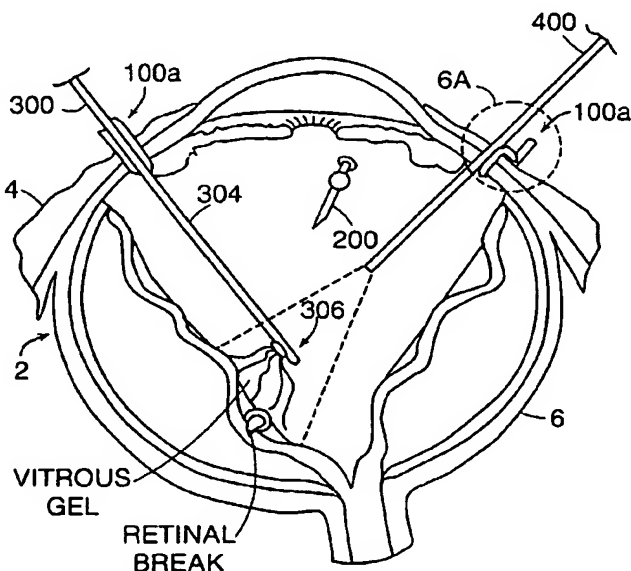
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[Continued on next page]

(54) Title: SUTURELESS OCULAR SURGICAL METHODS AND INSTRUMENTS



(57) Abstract: Featured are new methods for performing intra-ocular surgery that allow surgical personnel to access the intra-ocular volume to perform a surgical procedure or technique but which does not require the use of sutures to seal the sclera and/or conjunctiva following the procedure. The methods of the present invention generally include providing an entry alignment device and inserting the entry alignment device into an eye through both the conjunctiva and sclera so as to form an entry aperture that extends between the exterior of the eye and the intra-ocular volume within the eye. The provided alignment device is configured so as to form or provide an aperture or opening in each of the conjunctiva and sclera of the eye and to maintain these apertures or openings in each of the conjunctiva and sclera aligned during the surgical procedure so these apertures or openings form the entry aperture. In more particular aspects, the provided entry alignment device is sized such that when the entry alignment device is removed from the eye following the completion of the surgical procedure, the aperture or opening formed en

the sclera seals without the use of sutures. In a more specific aspect of the present invention, the provided entry alignment device is sized such that the apertures or openings and thus the entry aperture are self sealing. In other embodiments, a plurality of entry alignment devices are provided so a plurality of entry apertures can be formed in the eye. The invention also features a high speed vitreous cutting and aspirating device particularly configured for use in such methods and surgical procedures and techniques as well as the related entry alignment devices and other surgical instruments.

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*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

## INTERNATIONAL SEARCH REPORT

Int'l Application No

PCT/US 01/07561

A. CLASSIFICATION OF SUBJECT MATTER  
 IPC 7 A61F9/007 A61B17/34

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61F A61B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 487 725 A (PEYMAN) 30 January 1996 (1996-01-30) column 7, paragraph 1; figure 1 column 6, line 33	23-28
A	--- US 3 884 237 A (O'MALLEY) 20 May 1975 (1975-05-20) column 2, line 52 column 3, line 12	23-26
A	--- US 4 650 460 A (ROIZENBLATT) 17 March 1987 (1987-03-17) column 5, paragraph 2 - paragraph 3	23,27,28
A	--- WO 93 05719 A (VISIONARY) 1 April 1993 (1993-04-01) page 17, paragraph 3 --- -/-	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

## \* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

24 October 2001

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Inte I Application No  
PCT/US 01/07561

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	<p>WO 01 15640 A (ALCON) 8 March 2001 (2001-03-08) figure 7</p> <p>-----</p>	23-28

# INTERNATIONAL SEARCH REPORT

ational application No.  
PCT/US 01/07561

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 1-22  
because they relate to subject matter not required to be searched by this Authority, namely:  
Rule 39.1(iv) PCT - Method for treatment of the human or animal body by surgery
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:  
23-28

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.  
☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 23-28

High speed vitreous cutting/aspirating instrument

2. Claims: 29-35

Kit to provide and maintain aligned entry aperture(s)

3. Claims: 36-41

Forceps

## INTERNATIONAL SEARCH REPORT

International Application No  
PL 1703 01/07561

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